

Patent Claims

1. Column tray having a tray (100; 200; 300; 400) and gas penetration holes (111; 211; 311; 411) which are formed in such a way that their orifices are perpendicular or inclined to the column tray, characterized in that the tray (100; 200; 300; 400) has holes for receiving suitable superstructures (110; 210, 210A; 310, 310A; 420) adapted to the respective intended use of the tray, and at least a part of the gas penetration holes (111; 211; 311; 411) is arranged in the superstructures (110; 210, 210A; 310, 310A; 420), the tray (100; 200; 300; 400) and the superstructures (110; 210, 210A; 310, 310A; 420) being produced from the same or different corrosion-resistant materials or material combinations.

2. Column tray according to Claim 1, characterized in that the superstructures (110; 210, 210A; 310, 310A; 420) have side walls (113; 213; 313) which are substantially perpendicular to the column tray, and that the gas penetration holes (111; 211; 311; 411) are formed in the side walls (113; 213; 313) of the superstructures (110; 210, 210A; 310, 310A; 420).

3. Column tray according to Claim 2, characterized in that the gas penetration holes (111; 211; 311) are in the form of longitudinal slots and preferably each run from a point above the liquid level, which is to form during operation on the column

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tray, preferably up to the upper end region of the superstructure.

4. Column tray according to either of Claims 2 and 3, characterized in that the side walls (113; 213; 313) form a round, a circular, a polygonal, a rectangular or a square superstructure cross-section which corresponds to the cross-section of the holes of the tray (100; 200; 300; 400) in which the superstructures (110; 210, 210A; 310, 310A; 420) are arranged.
5. Column tray according to any of the preceding Claims, characterized in that the superstructures have a hood (112; 212; 312) in order to prevent entry of the liquid into the superstructures.
6. Column tray according to Claim 5, characterized in that the hood (312) has slots (315) for providing additional gas penetration holes (315).
7. Column tray according to any of the preceding Claims, characterized in that the tray (100; 200; 300; 400) is formed from steel having an enamel coating, steel having a coating of a corrosion-resistant plastic, e.g. polytetrafluoroethylene (PTFE), perfluoroalkoxy polymers (PFA), polyvinylidene fluoride (PVDF) or polyethylene (PE), from corrosion-resistant special alloys or tantalum or from a plastic.
8. Column tray according to any of the preceding Claims, characterized in that the superstructures

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are formed from plastic, such as, for example, polytetrafluoroethylene (PTFE), polyvinylidene fluoride (PVDF), perfluoroalkoxy polymers (PFA) or polyethylene (PE), or from glass, from corrosion-resistant special alloys or tantalum.

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9. Column tray according to any of the preceding Claims, characterized in that the tray (110) has further holes in which distributor cups (120) are arranged, the further holes preferably having a smaller cross-section than the holes for the superstructures.

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10. Column tray according to Claim 9, characterized in that small distributor tubes are fastened in the bores of the distributor cups (120), preferably by screwing together or by a plug connection, in such a way that targeted liquid distribution over the structured packings or random packings of the column can be ensured.

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11. Column tray according to any of Claims 1 to 8, characterized in that the superstructure (210A; 410) is arranged lower in at least one hole, in such a way that this superstructure can be used as an outflow pipe to the next lowest column tray.

12. Column tray according to any of the preceding Claims, characterized in that the column tray can be used as a liquid distributor, liquid redistributor, liquid collector or support tray for random packings and structured packings or as a mass transfer tray.

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13. Column tray according to any of the preceding Claims, characterized in that the column tray can be used as a support tray for random packings and structured packings and has small holes for the liquid throughput, the random packings and structures packings of the column preferably being embedded between the superstructures.

5 14. Superstructures having the features of the 10 superstructures of Claims 1 to 6 and 8, for retrofitting and/or converting existing trays with production of column trays according to any of Claims 1 to 13.

15 15. Column having at least one column tray according to any of Claims 1 to 13.

20 16. Column according to Claim 15, characterized in that the column is an enamel-lined column, a column lined with corrosion-resistant plastics, such as polytetrafluoroethylene (PTFE), perfluoroalkoxy polymers (PFA), polvinylidene fluoride (PVDF), polyethylene (PE) or similar plastic materials, a glass column or a column made 25 of highly corrosion-resistant metals, such as tantalum and special alloys.

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